

SEQUENCE LISTING

<110> Holtzman, Douglas A.
 Gearing, David P.
 Pan, Yang

<120> NOVEL GENES ENCODING PROTEINS HAVING
 PROGNASTIC, DIAGNOSTIC, PREVENTIVE, THERAPEUTIC AND OTHER
 USES

<130> 07334-324001

<150> US 09/712,726

<151> 2000-11-14

<150> US 08/820,364

<151> 1997-03-12

<150> US 09/757,421

<151> 2001-01-10

<150> US 08/843,652

<151> 1997-04-16

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<150> US 09/354,809

<151> 1999-07-16

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<151> 1997-09-26

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Val Ala Leu Gln Ala Thr Glu Ala Gly Pro Tyr Gly Ala Asn Met Glu	
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gac agc gtc tgc tgc cgt gat tac gtc cgt tac cgt ctg ccc ctg cgc	144
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 Val Pro Trp Val Lys Met Ile Leu Asn Lys Leu Ser Gln
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 Val Val Lys His Phe Tyr Trp Thr Ser Asp Ser Cys Pro Arg Pro Gly
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taccgcc	atg	gaa	caa	cgg	gga	cag	aac	gcc	ccg	gcc	gct	tcg	ggg	gcc		169
	Met	Glu	Gln	Arg	Gly	Gln	Asn	Ala	Pro	Ala	Ala	Ser	Gly	Ala		
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Gly	Leu	Arg	Val	Pro	Lys	Thr	Leu	Val	Leu	Val	Val	Ala	Ala	Val	Leu	
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ctg	ttg	gtc	tca	gct	gag	tct	gct	ctg	atc	acc	caa	caa	gac	cta	gct	313
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Pro	Gln	Gln	Arg	Ala	Ala	Pro	Gln	Gln	Lys	Arg	Ser	Ser	Pro	Ser	Glu	
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Ile	Ser	Cys	Lys	Tyr	Gly	Gln	Asp	Tyr	Ser	Thr	His	Trp	Asn	Asp	Leu	
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Thr	Phe	Arg	Glu	Glu	Asp	Ser	Pro	Glu	Met	Cys	Arg	Lys	Cys	Arg	Thr	
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Asp	Ile	Glu	Cys	Val	His	Lys	Glu	Ser	Gly	Ile	Lys	His	Ser	Gly	Glu	
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gcc	cca	gct	gtg	gag	gag	acg	gtg	acc	tcc	agc	cca	ggg	act	cct	gcc	745
Ala	Pro	Ala	Val	Glu	Glu	Thr	Val	Thr	Ser	Ser	Pro	Gly	Thr	Pro	Ala	
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Lys Val Leu Pro Tyr Leu Lys Gly Ile Cys Ser Gly Gly Gly Gly Asp	
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Pro Glu Arg Val Asp Arg Ser Ser Gln Arg Pro Gly Ala Glu Asp Asn	
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Val Leu Asn Glu Ile Val Ser Ile Leu Gln Pro Thr Gln Val Pro Glu	
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Gln Glu Met Glu Val Gln Glu Pro Ala Glu Pro Thr Gly Val Asn Met	
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Lys Gln Lys Ile Glu Asp His Leu Leu Ser Ser Gly Lys Phe Met Tyr	
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 Cys Lys Tyr Gly Gln Asp Tyr Ser Thr His Trp Asn Asp Leu Leu Phe
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<211> 411

<212> PRT

<213> Homo sapiens

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15

Arg His Gly Pro Gly Pro Arg Glu Ala Arg Gly Ala Arg Pro Gly Leu

20

25

30

Arg Val Pro Lys Thr Leu Val Leu Val Val Ala Ala Val Leu Leu Leu

35

40

45

Val	Ser	Ala	Glu	Ser	Ala	Leu	Ile	Thr	Gln	Gln	Asp	Leu	Ala	Pro	Gln
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Gln	Arg	Ala	Ala	Pro	Gln	Gln	Lys	Arg	Ser	Ser	Pro	Ser	Glu	Gly	Leu
65					70					75					80
Cys	Pro	Pro	Gly	His	His	Ile	Ser	Glu	Asp	Gly	Arg	Asp	Cys	Ile	Ser
				85					90					95	
Cys	Lys	Tyr	Gly	Gln	Asp	Tyr	Ser	Thr	His	Trp	Asn	Asp	Leu	Leu	Phe
			100					105					110		
Cys	Leu	Arg	Cys	Thr	Arg	Cys	Asp	Ser	Gly	Glu	Val	Glu	Leu	Ser	Pro
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Cys	Thr	Thr	Thr	Arg	Asn	Thr	Val	Cys	Gln	Cys	Glu	Glu	Gly	Thr	Phe
	130					135					140				
Arg	Glu	Glu	Asp	Ser	Pro	Glu	Met	Cys	Arg	Lys	Cys	Arg	Thr	Gly	Cys
145					150					155					160
Pro	Arg	Gly	Met	Val	Lys	Val	Gly	Asp	Cys	Thr	Pro	Trp	Ser	Asp	Ile
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Glu	Cys	Val	His	Lys	Glu	Ser	Gly	Ile	Ile	Ile	Gly	Val	Thr	Val	Ala
			180					185					190		
Ala	Val	Val	Leu	Ile	Val	Ala	Val	Phe	Val	Cys	Lys	Ser	Leu	Leu	Trp
		195					200					205			
Lys	Lys	Val	Leu	Pro	Tyr	Leu	Lys	Gly	Ile	Cys	Ser	Gly	Gly	Gly	Gly
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Asp	Pro	Glu	Arg	Val	Asp	Arg	Ser	Ser	Gln	Arg	Pro	Gly	Ala	Glu	Asp
225					230					235					240
Asn	Val	Leu	Asn	Glu	Ile	Val	Ser	Ile	Leu	Gln	Pro	Thr	Gln	Val	Pro
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Glu	Gln	Glu	Met	Glu	Val	Gln	Glu	Pro	Ala	Glu	Pro	Thr	Gly	Val	Asn
			260					265					270		
Met	Leu	Ser	Pro	Gly	Glu	Ser	Glu	His	Leu	Leu	Glu	Pro	Ala	Glu	Ala
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Pro	Thr	Glu	Thr	Leu	Arg	Gln	Cys	Phe	Asp	Asp	Phe	Ala	Asp	Leu	Val
305					310					315					320
Pro	Phe	Asp	Ser	Trp	Glu	Pro	Leu	Met	Arg	Lys	Leu	Gly	Leu	Met	Asp
			325					330						335	
Asn	Glu	Ile	Lys	Val	Ala	Lys	Ala	Glu	Ala	Ala	Gly	His	Arg	Asp	Thr
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Leu	Tyr	Thr	Met	Leu	Ile	Lys	Trp	Val	Asn	Lys	Thr	Gly	Arg	Asp	Ala
	355						360					365			
Ser	Val	His	Thr	Leu	Leu	Asp	Ala	Leu	Glu	Thr	Leu	Gly	Glu	Arg	Leu
	370					375					380				
Ala	Lys	Gln	Lys	Ile	Glu	Asp	His	Leu	Leu	Ser	Ser	Gly	Lys	Phe	Met
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<211> 2135

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (182)...(850)

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gacttcgcgg	gaccgtggcg	catgtttcct	gggagttact	gatcatcttc	tttgaagaaa	180
c atg aag tta cac tat gtt gct gtg ctt act cta gcc atc ctg atg ttc						229
Met Lys Leu His Tyr Val Ala Val Leu Thr Leu Ala Ile Leu Met Phe						
1	5	10	15			
ctg aca tgg ctt cca gaa tca ctg agc tgt aac aaa gca ctc tgt gct						277
Leu Thr Trp Leu Pro Glu Ser Leu Ser Cys Asn Lys Ala Leu Cys Ala	20	25	30			
agt gat gtg agc aaa tgc ctc att cag gag ctc tgc cag tgc cgg ccg						325
Ser Asp Val Ser Lys Cys Leu Ile Gln Glu Leu Cys Gln Cys Arg Pro	35	40	45			
gga gaa ggc aat tgc tcc tgc tgt aag gag tgc atg ctg tgt ctt ggg						373
Gly Glu Gly Asn Cys Ser Cys Cys Lys Glu Cys Met Leu Cys Leu Gly	50	55	60			
gcc ctt tgg gac gag tgc tgt gac tgt gtt ggt atg tgt aat cct cga						421
Ala Leu Trp Asp Glu Cys Cys Asp Cys Val Gly Met Cys Asn Pro Arg	65	70	75	80		
aat tat agt gac aca cct cca act tca aag agc aca gtg gag gag ctg						469
Asn Tyr Ser Asp Thr Pro Pro Thr Ser Lys Ser Thr Val Glu Glu Leu	85	90	95			
cat gaa ccg atc cct tct ctc ttc cgg gca ctc aca gaa gga gat act						517
His Glu Pro Ile Pro Ser Leu Phe Arg Ala Leu Thr Glu Gly Asp Thr	100	105	110			
cag ttg aat tgg aac atc gtt tct ttc cct gtt gca gaa gaa ctt tca						565
Gln Leu Asn Trp Asn Ile Val Ser Phe Pro Val Ala Glu Glu Leu Ser	115	120	125			
cat cat gag aat ctg gtt tca ttt tta gaa act gtg aac cag cca cac						613
His His Glu Asn Leu Val Ser Phe Leu Glu Thr Val Asn Gln Pro His	130	135	140			
cac cag aat gtg tct gtc ccc agc aat aat gtt cac gcg cct tat tcc						661
His Gln Asn Val Ser Val Pro Ser Asn Asn Val His Ala Pro Tyr Ser	145	150	155	160		
agt gac aaa gaa cac atg tgt act gtg gtt tat ttt gat gac tgc atg						709
Ser Asp Lys Glu His Met Cys Thr Val Val Tyr Phe Asp Asp Cys Met	165	170	175			
tcc ata cat cag tgt aaa ata tcc tgt gag tcc atg gga gca tcc aaa						757
Ser Ile His Gln Cys Lys Ile Ser Cys Glu Ser Met Gly Ala Ser Lys	180	185	190			
tat cgc tgg ttt cat aat gcc tgc tgc gag tgc att ggt cca gaa tgt						805
Tyr Arg Trp Phe His Asn Ala Cys Cys Glu Cys Ile Gly Pro Glu Cys	195	200	205			
att gac tat ggt agt aaa act gtc aaa tgt atg aac tgc atg ttt						850
Ile Asp Tyr Gly Ser Lys Thr Val Lys Cys Met Asn Cys Met Phe						

210

215

220

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cttactgatt	ttattgcccc	ctagcaataa	gccctttcct	ttgaatacat	gtacaacttt	1090
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agtctgatgt	ggttttcctc	tagcattcca	aaagggtttt	gctttgaaaag	tgttagcaga	1210
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<211> 223

<212> PRT

<213> Homo sapiens

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			20						25					30	
Ser	Asp	Val	Ser	Lys	Cys	Leu	Ile	Gln	Glu	Leu	Cys	Gln	Cys	Arg	Pro
			35						40					45	
Gly	Glu	Gly	Asn	Cys	Ser	Cys	Cys	Lys	Glu	Cys	Met	Leu	Cys	Leu	Gly
			50						55					60	
Ala	Leu	Trp	Asp	Glu	Cys	Asp	Cys	Val	Gly	Met	Cys	Asn	Pro	Arg	
65						70				75				80	
Asn	Tyr	Ser	Asp	Thr	Pro	Pro	Thr	Ser	Lys	Ser	Thr	Val	Glu	Glu	Leu
						85				90				95	
His	Glu	Pro	Ile	Pro	Ser	Leu	Phe	Arg	Ala	Leu	Thr	Glu	Gly	Asp	Thr
						100				105				110	
Gln	Leu	Asn	Trp	Asn	Ile	Val	Ser	Phe	Pro	Val	Ala	Glu	Glu	Leu	Ser
						115				120				125	
His	His	Glu	Asn	Leu	Val	Ser	Phe	Leu	Glu	Thr	Val	Asn	Gln	Pro	His
						130				135				140	
His	Gln	Asn	Val	Ser	Val	Pro	Ser	Asn	Asn	Val	His	Ala	Pro	Tyr	Ser
						145				150				155	
Ser	Asp	Lys	Glu	His	Met	Cys	Thr	Val	Val	Tyr	Phe	Asp	Asp	Cys	Met
						165				170				175	
Ser	Ile	His	Gln	Cys	Lys	Ile	Ser	Cys	Glu	Ser	Met	Gly	Ala	Ser	Lys
						180				185				190	
Tyr	Arg	Trp	Phe	His	Asn	Ala	Cys	Cys	Glu	Cys	Ile	Gly	Pro	Glu	Cys
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Ile Asp Tyr Gly Ser Lys Thr Val Lys Cys Met Asn Cys Met Phe
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ctg ctg ctc ggc tcc ccg ccg gcc cgc ggc gcc ggc cca gag ccc ccc 96
 Leu Leu Leu Gly Ser Arg Pro Ala Arg Gly Ala Gly Pro Glu Pro Pro
 20 25 30

gtg ctg ccc atc cgt tct gag aag gag ccg ctg ccc gtt ccg gga gcg 144
 Val Leu Pro Ile Arg Ser Glu Lys Glu Pro Leu Pro Val Arg Gly Ala
 35 40 45

gca ggc tgc acc ttc ggc ggg aag gtc tat gcc ttg gac gag acg tgg 192
 Ala Gly Cys Thr Phe Gly Gly Lys Val Tyr Ala Leu Asp Glu Thr Trp
 50 55 60

cac ccg gac cta ggg gag cca ttc ggg gtg atg cgc tgc gtg ctg tgc 240
 His Pro Asp Leu Gly Glu Pro Phe Gly Val Met Arg Cys Val Leu Cys
 65 70 75 80

gcc tgc gag gcg cct cag tgg ggt cgc cgt acc agg ggc cct ggc agg 288
 Ala Cys Glu Ala Pro Gln Trp Gly Arg Arg Thr Arg Gly Pro Gly Arg
 85 90 95

gtc agc tgc aag aac atc aaa cca gag tgc cca acc ccg gcc tgt ggg 336
 Val Ser Cys Lys Asn Ile Lys Pro Glu Cys Pro Thr Pro Ala Cys Gly
 100 105 110

cag ccg cgc cag ctg ccg gga cac tgc tgc cag acc tgc ccc cag gag 384
 Gln Pro Arg Gln Leu Pro Gly His Cys Cys Gln Thr Cys Pro Gln Glu
 115 120 125

cgc agc agt tgc gag ccg cag ccg agc ggc ctg tcc ttc gag tat ccg 432
 Arg Ser Ser Ser Glu Arg Gln Pro Ser Gly Leu Ser Phe Glu Tyr Pro
 130 135 140

cgg gac ccg gag cat cgc agt tat agc gac cgc ggg gag cca ggc gct 480
 Arg Asp Pro Glu His Arg Ser Tyr Ser Asp Arg Gly Glu Pro Gly Ala
 145 150 155 160

gag gag ccg gcc cgt ggt gac ggc cac acg gac ttc gtg gcg ctg ctg 528
 Glu Glu Arg Ala Arg Gly Asp Gly His Thr Asp Phe Val Ala Leu Leu
 165 170 175

aca ggg ccg agg tcg cag gcg gtg gca cga gcc cga gtc tcg ctg ctg	576
Thr Gly Pro Arg Ser Gln Ala Val Ala Arg Ala Arg Val Ser Leu Leu	
180 185 190	
cgc tct agc ctc cgc ttc tct atc tcc tac agg cgg ctg gac cgc cct	624
Arg Ser Ser Leu Arg Phe Ser Ile Ser Tyr Arg Arg Leu Asp Arg Pro	
195 200 205	
acc agg atc cgc ttc tca gac tcc aat ggc agt gtc ctg ttt gag cac	672
Thr Arg Ile Arg Phe Ser Asp Ser Asn Gly Ser Val Leu Phe Glu His	
210 215 220	
cct gca gcc ccc acc caa gat ggc ctg gtc tgt ggg gtg tgg cgg gca	720
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225 230 235 240	
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Val Pro Arg Leu Ser Leu Arg Leu Leu Arg Ala Glu Gln Leu His Val	
245 250 255	
gca ctt gtg aca ctc act cac cct tca ggg gag gtc tgg ggg cct ctc	816
Ala Leu Val Thr Leu Thr His Pro Ser Gly Glu Val Trp Gly Pro Leu	
260 265 270	
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Ile Arg His Arg Ala Leu Ala Glu Thr Phe Ser Ala Ile Leu Thr	
275 280 285	
cta gaa ggc ccc cca cag cag ggc gta ggg ggc atc acc ctg ctc act	912
Leu Glu Gly Pro Pro Gln Gln Gly Val Gly Gly Ile Thr Leu Leu Thr	
290 295 300	
ctc agt gac aca gag gac tcc ttg cat ttt ttg ctg ctc ttc cga ggg	960
Leu Ser Asp Thr Glu Asp Ser Leu His Phe Leu Leu Leu Phe Arg Gly	
305 310 315 320	
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Leu Leu Glu Pro Arg Ser Gly Gly Leu Thr Gln Val Pro Leu Arg Leu	
325 330 335	
cag att cta cac cag ggg cag cta ctg cga gaa ctt cag gcc aat gtc	1056
Gln Ile Leu His Gln Gly Gln Leu Leu Arg Glu Leu Gln Ala Asn Val	
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Ser Ala Gln Glu Pro Gly Phe Ala Glu Val Leu Pro Asn Leu Thr Val	
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Gln Glu Met Asp Trp Leu Val Leu Gly Glu Leu Gln Met Ala Leu Glu	
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Trp Ala Gly Arg Pro Gly Leu Arg Ile Ser Gly His Ile Ala Ala Arg	
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Lys	Ser	Cys	Asp	Val	Leu	Gln	Ser	Val	Leu	Cys	Gly	Ala	Asp	Ala	Leu		
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atc	cca	gtc	cag	acg	ggg	gct	gcc	ggc	tca	gcc	agc	ctc	acg	ctg	cta	1296	
Ile	Pro	Val	Gln	Thr	Gly	Ala	Ala	Gly	Ser	Ala	Ser	Leu	Thr	Leu	Leu		
				420				425				430					
gga	aat	ggc	tcc	ctg	atc	tat	cag	gtg	caa	gtg	gta	ggg	aca	agc	agt	1344	
Gly	Asn	Gly	Ser	Leu	Ile	Tyr	Gln	Val	Gln	Val	Val	Gly	Thr	Ser	Ser		
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gag	gtg	gtg	gcc	atg	aca	ctg	gag	acc	aag	cct	cag	cgg	agg	gat	cag	1392	
Glu	Val	Val	Ala	Met	Thr	Leu	Glu	Thr	Lys	Pro	Gln	Arg	Arg	Asp	Gln		
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cgc	act	gtc	ctg	tgc	cac	atg	gct	gga	ctc	cag	cca	gga	gga	cac	acg	1440	
Arg	Thr	Val	Leu	Cys	His	Met	Ala	Gly	Leu	Gln	Pro	Gly	Gly	His	Thr		
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gcc	gtg	ggg	atc	tgc	cct	ggg	ctg	ggg	gcc	cga	ggg	gct	cat	atg	ctg	1488	
Ala	Val	Gly	Ile	Cys	Pro	Gly	Leu	Gly	Ala	Arg	Gly	Ala	His	Met	Leu		
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Leu	Gln	Asn	Glu	Leu	Phe	Leu	Asn	Val	Gly	Thr	Lys	Asp	Phe	Pro	Asp		
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gga	gag	ctt	cgg	ggg	cac	gtg	gct	gcc	ctg	ccc	tac	tgt	ggg	cat	agc	1584	
Gly	Glu	Leu	Arg	Gly	His	Val	Ala	Ala	Leu	Pro	Tyr	Cys	Gly	His	Ser		
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ccc	cct	gtg	aag	agc	caa	gca	gca	ggg	cac	gcc	tgg	ctt	tcc	ttg	gat	1680	
Pro	Pro	Val	Lys	Ser	Gln	Ala	Ala	Gly	His	Ala	Trp	Leu	Ser	Leu	Asp		
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acc	cac	tgt	cac	ctg	cac	tat	gaa	gtg	ctg	ctg	gct	ggg	ctt	ggg	ggc	1728	
Thr	His	Cys	His	Leu	His	Tyr	Glu	Val	Leu	Leu	Ala	Gly	Leu	Gly	Gly		
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Gly	Val	Val	Lys	Asp	Leu	Glu	Pro	Glu	Leu	Leu	Arg	His	Leu	Ala	Lys		
				610				615				620					
ggc	atg	gcc	tcc	ctg	atg	atc	acc	acc	aag	ggg	agc	ccc	aga	ggg	gag	1920	
Gly	Met	Ala	Ser	Leu	Met	Ile	Thr	Thr	Lys	Gly	Ser	Pro	Arg	Gly	Glu		

625	630	635	640	
ctc cga ggg cag aga cga acg gtg atc tgt gac ccg gtg gtg tgc cca				1968
Leu Arg Gly Gln Arg Arg Thr Val Ile Cys Asp Pro Val Val Cys Pro	645	650	655	
ccg ccc agc tgc cca cac ccg gtg cag gct ccc gac cag tgc tgc cct				2016
Pro Pro Ser Cys Pro His Pro Val Gln Ala Pro Asp Gln Cys Cys Pro	660	665	670	
gtt tgc cct gag aaa caa gat gtc aga gac ttg cca ggg ctg cca agg				2064
Val Cys Pro Glu Lys Gln Asp Val Arg Asp Leu Pro Gly Leu Pro Arg	675	680	685	
agc cgg gac cca gga gag ggc tgc tat ttt gat ggt gac cgg agc tgg				2112
Ser Arg Asp Pro Gly Glu Gly Cys Tyr Phe Asp Gly Asp Arg Ser Trp	690	695	700	
cgg gca gcg ggt acg cgg tgg cac ccc gtt gtg ccc ccc ttt ggc tta				2160
Arg Ala Ala Gly Thr Arg Trp His Pro Val Val Pro Pro Phe Gly Leu	705	710	715	720
att aag tgt gct gtc tgc acc tgc aag ggg ggc act gga gag gtg cac				2208
Ile Lys Cys Ala Val Cys Thr Cys Lys Gly Gly Thr Gly Glu Val His	725	730	735	
tgt gag aag gtg cag tgt ccc cgg ctg gcc tgt gcc cag cct gtg cgt				2256
Cys Glu Lys Val Gln Cys Pro Arg Leu Ala Cys Ala Gln Pro Val Arg	740	745	750	
gtc aac ccc acc gac tgc tgc aaa cag tgt cca gtg ggg tcg ggg gcc				2304
Val Asn Pro Thr Asp Cys Cys Lys Gln Cys Pro Val Gly Ser Gly Ala	755	760	765	
cac ccc cag ctg ggg gac ccc atg cag gct gat ggg ccc cgg ggc tgc				2352
His Pro Gln Leu Gly Asp Pro Met Gln Ala Asp Gly Pro Arg Gly Cys	770	775	780	
cgt ttt gct ggg cag tgg ttc cca gag agt cag agc tgg cac ccc tca				2400
Arg Phe Ala Gly Gln Trp Phe Pro Glu Ser Gln Ser Trp His Pro Ser	785	790	795	800
gtg ccc cct ttt gga gag atg agc tgt atc acc tgc aga tgt ggg gca				2448
Val Pro Pro Phe Gly Glu Met Ser Cys Ile Thr Cys Arg Cys Gly Ala	805	810	815	
ggg gtg cct cac tgt gag cgg gat gac tgt tca ctg cca ctg tcc tgt				2496
Gly Val Pro His Cys Glu Arg Asp Asp Cys Ser Leu Pro Leu Ser Cys	820	825	830	
ggc tcg ggg aag gag agt cga tgc tgt tcc cgc tgc acg gcc cac cgg				2544
Gly Ser Gly Lys Glu Ser Arg Cys Cys Ser Arg Cys Thr Ala His Arg	835	840	845	
cgg cca gcc cca gag acc aga act gat cca gag ctg gag aaa gaa gcc				2592
Arg Pro Ala Pro Glu Thr Arg Thr Asp Pro Glu Leu Glu Lys Glu Ala	850	855	860	

gaa ggc tct tagggagcag ccagagggcc aagtgaccaa gaggatgggg 2641
 Glu Gly Ser
 865

cctgagctgg ggaaggggtg gcacgagga ccttcttgca ttctcctgtg ggaagcccag 2701
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 ccacaagggg gagaggcagc tgggcccagac cgaggtcaca gccactccaa gtccctgccct 2821
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 <212> PRT
 <213> Homo sapiens

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 Val Leu Pro Ile Arg Ser Glu Lys Glu Pro Leu Pro Val Arg Gly Ala
 35 40 45
 Ala Gly Cys Thr Phe Gly Gly Lys Val Tyr Ala Leu Asp Glu Thr Trp
 50 55 60
 His Pro Asp Leu Gly Glu Pro Phe Gly Val Met Arg Cys Val Leu Cys
 65 70 75 80
 Ala Cys Glu Ala Pro Gln Trp Gly Arg Arg Thr Arg Gly Pro Gly Arg
 85 90 95
 Val Ser Cys Lys Asn Ile Lys Pro Glu Cys Pro Thr Pro Ala Cys Gly
 100 105 110
 Gln Pro Arg Gln Leu Pro Gly His Cys Cys Gln Thr Cys Pro Gln Glu
 115 120 125
 Arg Ser Ser Ser Glu Arg Gln Pro Ser Gly Leu Ser Phe Glu Tyr Pro
 130 135 140
 Arg Asp Pro Glu His Arg Ser Tyr Ser Asp Arg Gly Glu Pro Gly Ala
 145 150 155 160
 Glu Glu Arg Ala Arg Gly Asp Gly His Thr Asp Phe Val Ala Leu Leu
 165 170 175
 Thr Gly Pro Arg Ser Gln Ala Val Ala Arg Ala Arg Val Ser Leu Leu
 180 185 190
 Arg Ser Ser Leu Arg Phe Ser Ile Ser Tyr Arg Arg Leu Asp Arg Pro
 195 200 205
 Thr Arg Ile Arg Phe Ser Asp Ser Asn Gly Ser Val Leu Phe Glu His
 210 215 220
 Pro Ala Ala Pro Thr Gln Asp Gly Leu Val Cys Gly Val Trp Arg Ala
 225 230 235 240
 Val Pro Arg Leu Ser Leu Arg Leu Leu Arg Ala Glu Gln Leu His Val
 245 250 255
 Ala Leu Val Thr Leu Thr His Pro Ser Gly Glu Val Trp Gly Pro Leu
 260 265 270
 Ile Arg His Arg Ala Leu Ala Ala Glu Thr Phe Ser Ala Ile Leu Thr
 275 280 285
 Leu Glu Gly Pro Pro Gln Gln Gly Val Gly Gly Ile Thr Leu Leu Thr
 290 295 300

Leu Ser Asp Thr Glu Asp Ser Leu His Phe Leu Leu Leu Phe Arg Gly
 305 310 315 320
 Leu Leu Glu Pro Arg Ser Gly Gly Leu Thr Gln Val Pro Leu Arg Leu
 325 330 335
 Gln Ile Leu His Gln Gly Gln Leu Leu Arg Glu Leu Gln Ala Asn Val
 340 345 350
 Ser Ala Gln Glu Pro Gly Phe Ala Glu Val Leu Pro Asn Leu Thr Val
 355 360 365
 Gln Glu Met Asp Trp Leu Val Leu Gly Glu Leu Gln Met Ala Leu Glu
 370 375 380
 Trp Ala Gly Arg Pro Gly Leu Arg Ile Ser Gly His Ile Ala Ala Arg
 385 390 395 400
 Lys Ser Cys Asp Val Leu Gln Ser Val Leu Cys Gly Ala Asp Ala Leu
 405 410 415
 Ile Pro Val Gln Thr Gly Ala Ala Gly Ser Ala Ser Leu Thr Leu Leu
 420 425 430
 Gly Asn Gly Ser Leu Ile Tyr Gln Val Gln Val Val Gly Thr Ser Ser
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 Glu Val Val Ala Met Thr Leu Glu Thr Lys Pro Gln Arg Arg Asp Gln
 450 455 460
 Arg Thr Val Leu Cys His Met Ala Gly Leu Gln Pro Gly Gly His Thr
 465 470 475 480
 Ala Val Gly Ile Cys Pro Gly Leu Gly Ala Arg Gly Ala His Met Leu
 485 490 495
 Leu Gln Asn Glu Leu Phe Leu Asn Val Gly Thr Lys Asp Phe Pro Asp
 500 505 510
 Gly Glu Leu Arg Gly His Val Ala Ala Leu Pro Tyr Cys Gly His Ser
 515 520 525
 Ala Arg His Asp Thr Leu Ser Val Pro Leu Ala Gly Ala Leu Val Leu
 530 535 540
 Pro Pro Val Lys Ser Gln Ala Ala Gly His Ala Trp Leu Ser Leu Asp
 545 550 555 560
 Thr His Cys His Leu His Tyr Glu Val Leu Leu Ala Gly Leu Gly Gly
 565 570 575
 Ser Glu Gln Gly Thr Val Thr Ala His Leu Leu Gly Pro Pro Gly Thr
 580 585 590
 Pro Gly Pro Arg Arg Leu Leu Lys Gly Phe Tyr Gly Ser Glu Ala Gln
 595 600 605
 Gly Val Val Lys Asp Leu Glu Pro Glu Leu Leu Arg His Leu Ala Lys
 610 615 620
 Gly Met Ala Ser Leu Met Ile Thr Thr Lys Gly Ser Pro Arg Gly Glu
 625 630 635 640
 Leu Arg Gly Gln Arg Thr Val Ile Cys Asp Pro Val Val Cys Pro
 645 650 655
 Pro Pro Ser Cys Pro His Pro Val Gln Ala Pro Asp Gln Cys Cys Pro
 660 665 670
 Val Cys Pro Glu Lys Gln Asp Val Arg Asp Leu Pro Gly Leu Pro Arg
 675 680 685
 Ser Arg Asp Pro Gly Glu Gly Cys Tyr Phe Asp Gly Asp Arg Ser Trp
 690 695 700
 Arg Ala Ala Gly Thr Arg Trp His Pro Val Val Pro Pro Phe Gly Leu
 705 710 715 720
 Ile Lys Cys Ala Val Cys Thr Cys Lys Gly Gly Thr Gly Glu Val His
 725 730 735
 Cys Glu Lys Val Gln Cys Pro Arg Leu Ala Cys Ala Gln Pro Val Arg
 740 745 750
 Val Asn Pro Thr Asp Cys Cys Lys Gln Cys Pro Val Gly Ser Gly Ala

755	760	765
His Pro Gln Leu Gly Asp	Pro Met Gln Ala Asp	Gly Pro Arg Gly Cys
770	775	780
Arg Phe Ala Gly Gln Trp	Phe Pro Glu Ser Gln Ser	Trp His Pro Ser
785	790	795
Val Pro Pro Phe Gly Glu	Met Ser Cys Ile Thr	Cys Arg Cys Gly Ala
805	810	815
Gly Val Pro His Cys Glu	Arg Asp Asp Cys Ser	Leu Pro Leu Ser Cys
820	825	830
Gly Ser Gly Lys Glu Ser	Arg Cys Cys Ser Arg	Cys Thr Ala His Arg
835	840	845
Arg Pro Ala Pro Glu Thr	Arg Thr Asp Pro Glu	Leu Glu Lys Glu Ala
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Glu Gly Ser		
865		

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<211> 940

<212> PRT

<213> Xenopus laevis

<400> 11

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Pro Leu Gln Ser Lys Thr Pro Ala Gly Cys Thr Phe Gly Gly Lys Phe	
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Tyr Ser Leu Glu Asp Ser Trp His Pro Asp Leu Gly Glu Pro Phe Gly	
50 55 60	
Val Met His Cys Val Leu Cys Tyr Cys Glu Pro Gln Arg Ser Arg Arg	
65 70 75 80	
Gly Lys Pro Ser Gly Lys Val Ser Cys Lys Asn Ile Lys His Asp Cys	
85 90 95	
Pro Ser Pro Ser Cys Ala Asn Pro Ile Leu Leu Pro Leu His Cys Cys	
100 105 110	
Lys Thr Cys Pro Lys Ala Pro Pro Pro Ile Lys Lys Ser Asp Phe	
115 120 125	
Val Phe Asp Gly Phe Glu Tyr Phe Gln Glu Lys Asp Asp Asp Leu Tyr	
130 135 140	
Asn Asp Arg Ser Tyr Leu Ser Ser Asp Asp Val Ala Val Glu Glu Ser	
145 150 155 160	
Arg Ser Glu Tyr Val Ala Leu Leu Thr Ala Pro Ser His Val Trp Pro	
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Pro Val Thr Ser Gly Val Ala Lys Ala Arg Phe Asn Leu Gln Arg Ser	
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Asn Leu Leu Phe Ser Ile Thr Tyr Lys Trp Ile Asp Arg Leu Ser Arg	
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Ile Arg Phe Ser Asp Leu Asp Gly Ser Val Leu Phe Glu His Pro Val	
210 215 220	
His Arg Met Gly Ser Pro Arg Asp Asp Thr Ile Cys Gly Ile Trp Arg	
225 230 235 240	
Ser Leu Asn Arg Ser Thr Leu Arg Leu Leu Arg Met Gly His Ile Leu	
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Val Ser Leu Val Thr Thr Thr Leu Ser Glu Pro Glu Ile Ser Gly Lys	
260 265 270	
Ile Val Lys His Lys Ala Leu Phe Ser Glu Ser Phe Ser Ala Leu Leu	

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Thr	Pro	Glu	Asp	Ser	Asp	Glu	Thr	Gly	Gly	Gly	Gly	Leu	Ala	Met	Leu		
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Gly	Leu	Ser	Gly	Glu	Gly	Asp	Gln	Ile	Pro	Ile	Leu	Val	Gln	Ile			
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Ser	His	Gln	Asn	His	Val	Ile	Arg	Glu	Leu	Tyr	Ala	Asn	Ile	Ser	Ala		
			340					345				350					
Gln	Glu	Gln	Asp	Phe	Ala	Glu	Val	Leu	Pro	Asp	Leu	Ser	Ser	Arg	Glu		
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Met	Leu	Trp	Leu	Ala	Gln	Gly	Gln	Leu	Glu	Ile	Ser	Val	Gln	Thr	Glu		
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Thr	Lys	Thr	Gly	Ala	Val	Gly	Ser	Ala	Ser	Ile	Thr	Leu	His	Glu	Asn		
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Gly	Thr	Leu	Glu	Tyr	Gln	Ile	Gln	Ile	Ala	Gly	Thr	Met	Ser	Thr	Val		
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450						455					460						
Ile	Leu	His	Asp	Met	Ser	Lys	Asp	Tyr	His	Asp	Gly	Arg	Val	Trp	Gly		
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				485					490					495			
Glu	Leu	Phe	Leu	Asn	Val	Ala	Thr	Lys	Asp	Phe	Gln	Glu	Gly	Glu	Leu		
			500					505				510					
Arg	Gly	Gln	Ile	Thr	Pro	Leu	Leu	Tyr	Ser	Gly	Leu	Trp	Ala	Arg	Tyr		
			515				520					525					
Glu	Lys	Leu	Pro	Val	Pro	Leu	Ala	Gly	Gln	Phe	Val	Ser	Pro	Pro	Ile		
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Arg	Thr	Gly	Ser	Ala	Gly	His	Ala	Trp	Val	Ser	Leu	Asp	Glu	His	Cys		
545					550					555				560			
His	Leu	His	Tyr	Gln	Ile	Val	Val	Thr	Gly	Leu	Gly	Lys	Ala	Glu	Asp		
				565					570					575			
Ala	Ala	Leu	Asn	Ala	His	Leu	His	Gly	Phe	Ala	Glu	Leu	Gly	Glu	Val		
			580					585					590				
Gly	Glu	Ser	Ser	Pro	Gly	His	Lys	Arg	Leu	Leu	Lys	Gly	Phe	Tyr	Gly		
			595				600					605					
Ser	Glu	Ala	Gln	Gly	Ser	Val	Lys	Asp	Leu	Asp	Leu	Glu	Leu	Leu	Gly		
610						615					620						
His	Leu	Ser	Arg	Gly	Thr	Ala	Phe	Ile	Gln	Val	Ser	Thr	Lys	Leu	Asn		
625					630					635				640			
Pro	Arg	Gly	Glu	Ile	Arg	Gly	Gln	Ile	His	Ile	Pro	Asn	Ser	Cys	Glu		
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Ser	Gly	Gly	Val	Ser	Leu	Thr	Pro	Glu	Glu	Pro	Glu	Tyr	Glu	Tyr	Glu		
			660					665					670				
Ile	Tyr	Glu	Glu	Gly	Arg	Gln	Arg	Asp	Pro	Asp	Asp	Leu	Arg	Lys	Asp		
			675				680					685					
Pro	Arg	Ala	Cys	Ser	Phe	Glu	Gly	Gln	Leu	Arg	Ala	His	Gly	Ser	Arg		
690					695						700						
Trp	Ala	Pro	Asp	Tyr	Asp	Arg	Lys	Cys	Ser	Val	Cys	Ser	Cys	Gln	Lys		
705					710					715				720			
Arg	Thr	Val	Ile	Cys	Asp	Pro	Ile	Val	Cys	Pro	Pro	Leu	Asn	Cys	Ser		
				725					730					735			

Gln Pro Val His Leu Pro Asp Gln Cys Cys Pro Val Cys Glu Glu Lys
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 Lys Glu Met Arg Glu Val Lys Lys Pro Glu Arg Ala Arg Thr Ser Glu
 755 760 765
 Gly Cys Phe Phe Asp Gly Asp Arg Ser Trp Lys Ala Ala Gly Thr Arg
 770 775 780
 Trp His Pro Phe Val Pro Pro Phe Gly Leu Ile Lys Cys Ala Ile Cys
 785 790 795 800
 Thr Cys Lys Gly Ser Thr Gly Glu Val His Cys Glu Lys Val Thr Cys
 805 810 815
 Pro Lys Leu Ser Cys Thr Asn Pro Ile Arg Ala Asn Pro Ser Asp Cys
 820 825 830
 Cys Lys Gln Cys Pro Val Glu Glu Arg Ser Pro Met Glu Leu Ala Asp
 835 840 845
 Ser Met Gln Ser Asp Gly Ala Gly Ser Cys Arg Phe Gly Arg His Trp
 850 855 860
 Tyr Pro Asn His Glu Arg Trp His Pro Thr Val Pro Pro Phe Gly Glu
 865 870 875 880
 Met Lys Cys Val Thr Cys Thr Cys Ala Glu Gly Ile Thr Gln Cys Arg
 885 890 895
 Arg Gln Glu Cys Thr Gly Thr Thr Cys Gly Thr Gly Ser Lys Arg Asp
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 Val Lys Ser Asp Glu Thr Arg Thr Pro Trp Ser Phe
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29

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35

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<220>
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<210> 15
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<220>
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<400> 19
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<400> 22
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<210> 23
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<400> 23
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